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ABSTRACT

Educational and occupational choices may be considered, from a developmental point of view, as long-term problems whose solutions imply a number of tasks. These tasks sequentially might be called exploration, crystallization, specification, and implementation. What are the processes involved in these tasks? What are the abilities which make possible the realization of these tasks? In this article an attempt is made to conceptualize the relationships between creative thinking and exploration, convergent thinking and crystallization, evaluative thinking and specification, implicative thinking and implementation. From this approach, the potential contribution of cognitive psychology to theories of vocational development is examined, and a new methodology for guidance is outlined. (Author)

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THE INNER PROCESSES UNDERLYING VOCATIONAL DEVELOPMENT[1]

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Considerable progress has been made in the field of vocational psychology since Parsons (1909) suggested that occupational choice is the outcome of a reasoning by means of wich the individual tries to match his aptitudes, preferences, and other traits with the characteristics of a specific occupation. There is no need here to present an extensive review of the variety of approches which vocational psychologists have employed, since then, in their attempts to understand how people choose occupations, and how their choices may result in successful or unsatisfactory vocational adjustment. It must be pointed out, however, that the 1950's marked an important turning point in the history of vocational psychology, when Ginzberg and his associates (Ginzberg, Ginsburg, Axelrad, & Herma, 1951) emphasized the developmental aspect of occupational choice, and when Super and his associates launched a longitudinal study wich would trace the vocational development of a group of boys from age 15 to age 35.

Ginzberg and his associates had presented their views as an approach to a general theory. In his writings, Super (1953, 1957, 1969; Super, Crites, Hummel, Moser, Overstreet, & Warnath, 1957; Super, Starishevsky, Matlin, & Jordaan, 1963, pp. 1-32, 78-95) went further, and elaborated a theory of career development wich is based on differential psychology, developmental psychology, and self-concept theory. In discussing the dev lopmental aspect of occupational choice in adolescence and adulthood, Super

delimits life stages and describes developmental tasks with which the individual must cope in order to reach vocational maturity.

While occupational choice had been considered, at first, more or less as an incident, vocational counselors, under the influence of the afore-named writers, came to view it as a long term process. From a developmental point of view, educational and occupational choices may thus be considered as long term problems, whose solutions imply a number of tasks. Succesful carrying out of one task is likely to lead to success in the following task, with the consequence that the individual can go through his successive life stages without too much difficulty.

Although Super (Super et al., 1963, pp. 78-95) presents a detailed analysis of five developmental tasks, and of the attitudes and behaviors which are relevant to each of them, it is felt that our understanding of vocational development could be increased if we attempted to analyse the inner processes involved in these tasks or, in other words, if we looked for the underlying abilities which are likely to make possible the realization of these tasks. And in order to conceptualize the relationship between vocational developmental tasks and abilities, we are brought to examine some developmental tasks in relation to Guilford's model of intellect (Guilford, 1967; Guilford & Hoepfner, 1971).

Before attempting a theoretical analysis of these relationships, however, three points need to be clarified. First, we

are focusing on the vocational developmental tasks of adolescence and early adulthood. Although it would be worth studying the individual who is in the process of stabilizing in his occupation, or who is attempting to consolidate his status in his field of work, we are limiting ourselves, for the moment, to considering the period of life which seems to be crucial with regard to vocational choice and adjustment. Second, we are considering exploration as a developmental task. This is not to deny that adolescence, and even early adulthood, is an exploratory period in the process of vocational development. However, we think that it is important, in the approach that we are suggesting, to examine closely the abilities which are likely to play a role in exploration. Finally, space limitations obviously preclude an exhaustive analysis of the phenomena under consideration. Therefore, this article will be limited to a presentation of the basic elements of the approach which is suggested, and to a brief survey of its implications for research and practice.

Let us consider, first, Guilford's theory of intelligence. Developmental tasks will be discussed next, while we shall at the same time describe the role that the intellectual factors identified by Guilford are likely to play in the realization of these tasks.

Guilford's Structure-of-Intellect Theory

Among the theoreticians interested in the study of intelligence, Guilford is perhaps the one who has proposed so far

the most comprehensive model. In the last twenty years or so, Guilford and his associates at the University of Southern California have been involved in the Aptitude Research Project. Using the procedure of factor analysis as one of their major tools, they have elaborated and tested what they call a morphological model, in which abilities are classified in three different ways. The categories of one way intersect with those of the other ways of classification. One way of classification is in terms of operations, and it involves five categories, which Guilford and Hoepfner (1971, pp.18-21) call cognition (knowing); memory, that is to say, learning "that sticks"; divergent production, or generation of logical alternatives from a given information, where variety is emphasized, and which is likely to involve transfer recall, or recall instigated by new cues; convergent production, which means the generation of logic-tight conclusions; and evaluation, or the operation of judging the goodness of what is known or produced.

The second way of classification is in terms of contents, or areas of information within which the operations are performed. Four categories of content were identified: Figural, which pertains to information in concrete form, as perceived or as recalled in the form of images; symbolic, which involves signs, code elements such as numbers or letters; semantic, pertaining to information in the form of conceptions or mental constructs; and behavioral, pertaining to information involved in human interactions. Those content categories refer, as it can be seen, to basic, substantive kinds of information.

The third way of classification, which is in terms of products, refer to formal kinds of information. In the model, six categories of information are listed: Units, that is to say, segregated or circumscribed items of information; classes, in which are grouped sets of items of information; relations, pertaining to connections between items of information; systems, or organized patterns of information; transformations, which refer to changes (like redefinitions) in existing information; and finally implications, or information suggested by other information.

By putting together the three classifications mentioned above in one cross-classification we obtain a cubic model. As Guilford and Hoepfner (1971, p.19) point out:

Altogether there are 120 little cubes or cells in the model, each representing a unique kind of ability. An ability in any cell is unique by virtue of its own combination of one kind of operation, one king of content, and one kind of product. It may be the cognition of symbolic units, the memory for semantic relations, or the evaluation of behavioral systems. Four times five times six yields 120 such combinations, and theoretically 120 unique abilities.

It must be noted, however, that Guilford and Hoepfner do not pretend that those 120 abilities cover the whole range of intellectual factors, because more than one ability may be represented by one single cell. For instance, the cell for cognition

of figural systems appears to involve a kinesthetic ability, in addition to a visual and auditory ability.

In spite of the fact that much remains to be done in order to deepen our knowledge of the structure and functioning of human intelligence, it is noteworthy that Guilford and his associates, in a series of studies, have already demonstrated the existence of 98 of the 120 abilities which had been hypothesized. In their book entitled The analysis of intelligence, Guilford and Hoepfner (1971) summarize the reports of these studies. They analyse the abilities involved in reasoning, problem solving, creative thinking and planning, along with evaluation and memory abilities.

Meaningful relationships can be hypothesized between the intellectual factors which have been demonstrated and the operations required for carrying out the developmental tasks. We will now attempt an analysis of these relationships by considering, sequentially, the tasks of exploration, crystallization, specification, and implementation.

Exploration

Exploration, or exploratory behavior, as it is more usually called, has been an object of study which has attracted the interest of workers in many psychological areas. Berlyne (1960) talks about epistemic behavior, or behavior that augments knowledge, and he distinguishes (p.266) three main classes of

epistemic responses: epistemic observation, epistemic thinking, and consultation. He points out that epistemic thinking "is part of what psychologists have usually called 'productive' or 'creative' thinking," and that it differs from reproductive thinking in the sence that "its function is to put the indidual in permanent possession of new knowledge".

In relation to the problem of creative thinking, Berlyne (p. 282) refers to an article in which Guilford (1956) analyses a dimension or intellectual factor called sensitivity to problems. As Berlyne points out, the dependence of epistemic behavior on this dimension seems to be borne out.

Maddi (Fiske & Maddi, 1961), in a chapter entitled Exploratory behavior and variation seeking in man, recognizes (p. 265) that it is impossible, at this stage of our knowledge, to state definitive conclusions about the variables which play a role in exploratory behavior. A tentative conclusion suggested by Maddi is that "novel, complex, incongruous, or surprising stimuli elicit orienting responses, and play". Looking for one basic variable that could produce exploration, Maddi (p. 267) suggest that complexity, conflict, and variation are among the concepts which are comprehensive enough to be considered as such. With respect to the last named variable, he points out that the need for variation may be satisfied passively as when an individual

reads a variety of material, or that it may be satisfied in a more active way, by creative writing, for instance, which may produce novelty by virtue of the thought processes which are involved in it. Considering the variation variable from the point of view of training, there is evidence, as noted by Maddi (p. 264), that a more variable early environment "produces an adult organism that is perceptually and behaviorally more alert, flexible, and able to cope with change." The results obtained by Nusbaum (1965) with animal subjects point to a similar conclusion.

Lester (1968) present an approach toward a theory of exploration in which exploration is seen as the attempt of the organism to increase the level of stimulation that it needs. Houston and Mednick (1969, pp.139-149) report an experiment which suggests that there is possibly a relationship between creativity and the need for novelty. And in a theoretical analysis, Maslow (1969, pp. 199-217) contrasts the need to know with the fear of knowing. For Maslow, fear of knowledge of oneself is often parallel with fear of the external reality. But fear of knowledge of oneself, as he points out, can mean fear of one's personal growth, with the consequence that we can find (p.209) a "kind of resistance, a denying of our best side, of our talents, of our finest impulses, of our highest potentialities, of our creativeness."

In other words, Maslow interprets the fear of knowing as a fear of doing, a fear of responsibilities. And he concludes that the psychological and social factors that increase fear are likely to cut our impulse to know, whereas the factors which favor courage, freedom, and boldness will free this impulse.

So far, we have been considering exploratory behavior in general. It is worth considering it, however, from a vocational point of view. In this respect, Jordaan's analysis (Super et al., 1963, pp. 42-78) of exploratory behavior in the formation of self and occupational concepts is an important contribution to our understanding of this process. Jordaan identifies five elements which he considers as essential in a definition of exploratory behavior: search, experimentation, investigation, trial and hypothesis testing. He sees exploratory behavior as providing data which can be utilized in the formation of self and occupational concepts, and as a means for testing these concepts against reality.

The outcomes of exploration or, more specifically, of vocational exploratory behavior, do not depend only on cognitive abilities, but also on attitudes. Jordaan points out, for example, that some things may remain unknown to the individual because he does not symbolize them accurately, or because he does not permit them to become symbolized. But problem solving ability it clearly essential to vocational exploration. It is needed to make judgments

and inference. As Jordaan conceives this ability, it includes the ability to formulate hypotheses about what to look for and how and where to look for it, the ability to interpret information once it is obtained, and the ability to decide which items of information and which aspects of a situation are relevant for goal selection and for goal directed behavior.

The brief review of literature which has just been presented reveals that exploration is a complex activity which depends on a number of attitudes and abilities. If we focus our attention on the cognitive aspects of exploration, we see that the individual who explores has to observe, to make trials. He must be able to make judgments and inferences, to interpret information. But it seems, also, that creative thinking plays an important role in exploration: the individual who explores has to experiment, to investigate, to formulate hypotheses about what should be investigated and how it should be; novelty, complexity, incongruity are characteristics which are likely to elicit exploration; creative activity may be, for the individual, a means of satisfying his need for variation and stimulation; fear of one's creativity may inhibit exploration. So, without denying that many intellectual abilities play a role in exploration, it is interesting to ask whether the creative thinking abilities isolated by Guilford and his associates would not play a prominent role in this task.

Guilford (1967, p. 220) distinguishes creative thinking from what is often called logical thinking. Whereas convergent production (logical thinking) in a matter of generating logical necessities, divergent production (or creative thinking) is a matter of generating logical possibilities. The individual who is in the process of exploration does not have, yet, to make final decisions. In order for him to make a valid exploration, he must be able to see all the possible aspects of a situation, all the elements of a problem. In relation with this question, Guilford and his associates tested the hypothesis that the more creative person can penetrate further into his experiences, can see more things than there are on the surface. As a result, they determined a factor which was identified as cognition of semantic transformations. In describing this factor, Guilford and Hoepfner (1971, p. 187) point out that "the penetrating person sees more aspects of a given experience, and that he is able to do so because he sees transformations readily." One can easily see the importance of this ability for the individual who is involved in the vocational developmental task of exploration. The more aspects of a given situation one can see, the more he can increase his self and occupational knowledge by experiences such as attending a careers conference, visiting a factory, or interviewing a worker.

Sensitivity to problems has been defined (Guilford & Hoepfner, p. 186) as the ability to see implications from a given information. In Guilford's tri-dimensional classification of intelligence, this is the ability which he calls cognition of semantic implications. As mentioned above, a relationship seems to exist between this ability and exploratory hebavior.

Fluency and flexibility are two other categories of abilities which are likely to play important roles in exploration. The fluent person (Guilford & Hoepfner, 1971, p. 187) can generate information based upon that which he has in his memory store. Althouth recall is involved in this activity, fluency is more than recall, for the fluent person generates information in response to cues with which it was not connected in learning. As Guilford and his associates point out, much of this information comes by way of "transfer recall." We can infer that the fluent person is likely to benefit from exploration to a greater extent than the non-fluent one since he has the capacity, so to speak, to enrich the information that he gets by the information that he already possesses. In this connection, it must be noted that most of the 12 fluency abilities hypothesized in Guilford's model have been demonstrated.

Flexibility (Guilford & Hoepfner, 1971, p. 187) has been distinguished in terms of classes and transformations. The former type pertains to lack of rigidity of class membership for

items of information which have to be retrieved from memory storage with class cues as the instigating information. Flexibility with regard to transformations is the ability to transpose information. Again we can infer that fruitful exploration is likely to depend on the individual's ability to avoid rigidity in classifying his information and in his ability to adapt the information that he acquires.

Crystallization

In his analysis of vocational development in adolescence and early adulthood, Super (Super et al., 1963, pp.79-95) suggests that the individual who is at the crystallization level may still express a vague and tentative preference. However, he has to rule out some possible preferences, to narrow his field of preferences. Super considers that crystallization is essentially and at its best a cognitive process. Awareness of factors to consider in expressing a preference, and awareness of contingencies which may affect vocational goals are likely to play important roles in this process, whose outcome is the formulation of a general occupational-type preference which serves as the symbol of a number of related activities.

In this connection, Berlyne's discussion of the role of classification in the functioning of knowledge is worth mentioning. He suggests (Berlyne, 1960, p.266) that knowledge can represent

perceived properties of the object of hidden properties that could be perceived if the object were examined from another angle or from inside. From this point of view, the goal of classification is to extend "primary stimulus generalization and discrimination, which depend on readily perceptible physicochemical similarities and differences, by making secondary (also known as "mediated" or "acquired") generalization and discrimination possible." In other words, the outcomes of classification are not merely an organization of knowledge, but also new knowledge.

We are thus brought to see, again, that vocational choice is a problem-solving process, and that as such, it is likely to depend on many intellectual abilities. If we try to identify, in the terms of Guilford's terminology, the categories of intellectual operations which are of particular importance for the task of crystallization, it seems that what Guilford and Hoepfner (1971, pp.121-122) call cognition and convergent production operations play a fundamental role in this process. In order to crystallize his preference, the individual must be aware of the elements involved in the problem, and he must be able to order these elements, to classify them according to some logical principles. He has to decide that some fields of activity are likely to correspond to his aptitudes, interests, and values, while others are not. He must be able to discover the characteristics which may be shared

by many occupations. He should have the capacity to think in terms of systems which are logically organized. All these operations are likely to call upon various cognition and logical thinking abilities. Guilford's investigations brought him to realize for instance that there are separate abilities for dealing with classes and relations. But it is encouraging, and quite impressive, to see the number of empirical referents which have been found for the cognition and convergent-production operations, since all 24 expected cognition abilities have been demonstrated, and also 15 of the 24 convergent-production abilities.

Specification

The third vocational developmental task under consideration is specification. In specifying a preference, the individual, as Super suggested (Super et al., 1963, pp.87-88), converts a generalized or tentative vocational preference into a specific preference. One of the characteristics of such a preference is that the individual feels committed to it with some assurance. His information about his preferred occupation is more specific and so is his planning for the further step of implementation. His information is also, perhaps, more accurate, more varied, and better assimilated. A specific preference should be more consistent than a preference which has just been crystallized. But confidence in a specific preference is the attitude which more fully differentiates specification from crystallization.

In describing the task of specification, Super again underlines the importance of cognitive aspects. He writes (Super et al., 1963, p.88): "Like the other developmental tasks, it is best handled cognitively." If we refer to Guilford's model of intellect, it is sure that cognition operations are involved in specification like in any other task. But there is one group of intellectual abilities which are likely to be of crucial importance in specification: it is the group that Guilford and Hoepfner call evaluation abilities. Their investigations pertaining to this category of intellectual operations brought them to define evaluation in these terms: "Evaluation is the process of comparing items of information, in terms of known specifications, on the basis of logical criteria such as identity and consistency" (Guilford & Hoepfner, 1971, p.288). Of the 24 evaluation abilities hypothesized in the structure-of-intellect model, 18 have been demonstrated. Thus, we can see again that the number of empirical referents for evaluative thinking is quite impressive.

Implementation

The last vocational developmental task of what Super calls the exploratory stage of vocational development (Super et al., 1963, pp.79-95) is implementation. Once the individual has explored his potentialities and the opportunities of the world of work, once he has narrowed the range of the possible choices until he has specified

which occupation he wanted to enter, he has to commit himself by entering a cour e of study or by starting on his first job in the occupation that he has chosen. Implementation is not only a matter of preference. It implies motor or instrumental behavior (Super et al., 1963, p.83). However, before implementation can take place, the individual must be aware, as Super points out (pp.88-89), of the need to implement his preference, and he must get involved in planning, that is to say, he must consider and decide upon means for implementing his preference.

Guilford's studies of planning abilities throw light on some of the processes which are likely to be involved in the implementation of a vocational preference. From a preliminary consideration of the kind of activities that planning may require, six hypotheses were generated and tested (Guilford & Hoepfner, 1971, pp.142-150). According to the orientation hypothesis, the plan which is produced depends upon the manner in which the planner orients himself to the situation: the planner must be able to recognize the variables which operate in a situation, and he must be able to see the order or disorder that exists in a mass of information. Abilities for prediction were also hypothesized, in the sense that a planner must be concerned with the possible outcomes of his plan, and he must be able to extrapolate, from the information that he possesses, what will be these outcomes. The

other hypotheses related to the abilities to elaborate (e.g. to produce alternative methods), to order the elements of a problem or the steps required for its solution, to invent new methods or new applications, to evaluate the importance of the variables involved and to detect the deficiencies in a proposed procedure.

The analyses demonstrated that cognition abilities are involved in orientation and prediction. In terms of the structure-of-intellect model, orientation has to do mainly with systems, and prediction involves implication. Abilities for divergent production of implications are associated with elaboration. The test of the hypothesis pertaining to ingenuity (inventing new methods or new applications) led to associate ingenuity with the divergent production of semantic transformations. Finally, it was demonstrated that evaluation abilities are also involved in planning. As in the case of the other developmental tasks, it thus seems that a wide range of abilities underlie implementation. However, implication and transformation abilities are among the abilities which appear to be important in this respect.

Implications for Research and Pratice

The foregoing analysis is admittedly schematic. It is however possible, from this outline, to examine what are the implications of this conception for research and pratice. Among the questions which deserve investigation, four seem to be parti-

cularly important: First, what is the importance of intellectual factors in occupational choice and adjustment? Second, what are the relationships between specific intellectual abilities and successful performance of the vocational developmental tasks? Third, is it possible to facilitate vocational development by fostering intellectual abilities, for instance, creative abilities? If so, what are the consequences in terms of vocational guidance approaches?

With regard to the first question, it is a commonplace to say that a variety of factors play a role in occupational choice and influence its outcomes. Not many counselors would assert that occupational choice and adjustment are exclusively influenced by the individual's need pattern, his socioeconomic status, or his scholaptitude. The problem is to portray as precisely as possible the role that each factor or category of factors may have in this process. Statistical techniques (e.g. multivariate, discriminant analysis) are already available for this purpose. However, instead of investigating the influence of verbal or non-verbal intelligence in occupational choice, or the predictive value of only some factors like those measured by the General Aptitude Test Battery, it would be possible, on the basis of Guilford's findings, to assess the importance of a much greater number of intellectual factors with respect to criteria like satisfaction, success, etc. These findings

could be utilized to prepare occupational descriptions in terms of specific abilities required or desirable in various occupations.

With the increasing empirical evidence that many kinds of abilities are comprised in that we used to call general intelligence, it is also important to investigate the relationship between specific abilities and specific tasks. We know (Crites, 1969, p.575) that in general indices of vocational maturity correlate more highly with intellective than with non intellective variables. But our knowledge and comprehension of vocational development would be greatly increased if we knew, for instance, to what extent high abilities in creative thinking are conducive to a more extensive exploration of self and occupations, of if we had data on the relationship between evaluation abilities and the specification of a vocational preference. A vocational maturity inventory could possibly be devised in order to measure to what extent each vocational developmental task has been accomplished by individuals, and these data could be related to the individuals' measured intellectual abilities. Such a hierarchical test could also be a useful diagnostic device in working with students whose vocational development has been disturbed.

This brings us to the third question formulated above: Is it possible to facilitate vocational development through stimulation of the development of intellectual abilities? It has been

suggested by Havighurst (1964, p.221) and Super (Super et al., 1963, p.87) that the successful performance of one task is a prerequisite to the performance of the following task. If such is the case, insufficient exploration could result in pseudo-crystallization, which could itself make difficult or impossible the specification of a vocational preference. However, if individuals can be trained to perform adequately the sequence of vocational developmental tasks, many people whose vocational development is characterized by a series of trials and errors could be helped to improve their strategies, and of course prevention of such problems could be possible in many cases.

A body of theory and research has been concerned with the problem of the training of abilities. Fifteen years ago, Bartlett (1958) was considering thinking abilities as processes which could be trained. Since then, as a review of research shows (Pelletier & Noiseux, 1971, pp.18-25), an impressive number of books and articles have reported the results of studies indicating that the processes of creative thinking can be improved by proper training, and that such improvements persist over time. As Pelletier (1973) reports, work pursued in the field of cognitive psychology has also resulted in the invention of numerous strategies intented to foster non only creative abilities, but also conceptual and evaluative abilities as well

These advances suggest interesting possibilities with regard to the counselor's mode of intervention. In fact, we are brought to contemplate new dimensions to the guidance worker's role. At the beginning of the guidance movement, the counselor was seen as the one who helped individuals find the occupation which best fitted their aptitudes and aspirations. In many of his writings, Super (e.g. 1957, 1963) has been influential, then, in suggesting that vocational guidance should pay attention to the developmental aspects of occupational choice. Seen in this perspective, the counselor's role is the one of an agent who not only helps the individual to develop an adequate picture of himself and of the world of work, but also to understand where he goes, that is to say, which stages he is going through, which factors are likely to influence his vocational decisions, which tasks must be performed in order for him to reach a satisfactory vocational adjustment, what these tasks consist of, and how they can be adequately accomplished. In this kind of intervention, the counselor pays attention to the intellectual as well as to the emotional and social aspects of choice and adjustment.

If we consider, however, the preceding analysis of the cognitive dimensions of vocational development, we may also imagine the counselor as the one who, by the systematic application of a number of strategies, helps the individual either to make a full

utilization of the abilities which seem to be particularly important for the satisfactory performance of given tasks, or to develop the abilities which are necessary for the performance of such tasks. This is what we call the activation of vocational development. Concretely, this means, for example, that the counselor tries to mobilize the individual's creative thinking abilities in order to deal with the task of exploration. Since the main objective of the counselor is to help the individual develop vocationally, his goal is not to develop the client's abilities as such. This role can be assumed by other specialists, e.g. a learning psychologist. However, if we consider that vocational development is, as Super suggested (1957), a specific aspect of personal development, and that it may influence personal development, it is highly plausible that training the individual to explore himself and occupations will contribute to increasing his creative abilities.

The importance which is given, in this paper, to the intellectual factors in vocational development should not be interpreted, of course, as suggesting that other factors are negligible. Feelings, emotions, attitudes, aspirations are but a few of the other elements which are involved in human development. A number of attitudes and behaviors have been conceptually related to vocational developmental tasks (Super et al., 1963; pp.79-95), and empirical studies reviewed by Crites (1969,

pp.303-321) indicate that indecision and unrealism in career decision making are related, in adolescence, to maturity of choice attitudes. Consequently, the activation of vocational development is not an approach which focuses exclusively on the intellectual processes, and which is conceived as a "recipe" which could be substituted for the counseling approach. On the contrary, competence in counseling should be a condition for a fruitful utilization of this method, since attitudes are to be dealt with as well as aptitudes and other factors if we want to take into consideration all the elements which are involved in the individual's personal and vocational development.

Perspectives

Some of these ideas are already being implemented. Two years ago, Pelletier and Noiseux suggested that the ability-training methods which have been developed and applied in education during the recent years could be adapted and developed further in order to help adolescents in their vocational development (Pelletier & Noiseux, 1971). In the summer of 1971, they offered to some of our students in vocational guidance an optional course entitled "Méthodes créatives appliquées aux activités d'orientation". Since then, nearly 500 students and practicioners in vocational guidance have been initiated into these methods. The interest stimulated by this approach encoureged its initiators to publish "Dossier d'Orientation I" (Noiseux & Pelletier, 1972, a,b), a program of group and individual activities

with regard to the tasks of exploration and crystallization.

A few months after Pelletier and Noiseux had started on their project of developing these methods, we launched a longitudinal research project (Pelletier, Noiseux & Bujold, 1971) whose objective was twofold. A first purpose was to explore the relationships between some cognitive functions and some aspects of vocational maturity. A second purpose was to investigate the effects of the application of activation methods on vocational development.

The analysis of the first result is still under way. Graduate students are participating in this task during our weekly research seminars. Reports of this research should be published in a not too distant future, along with theoretical papers relating to the problems being investigated.

[1]The present article is based on a paper presented by the senior author at the 5th world congress of the International Association of Educational and Vocational Guidance, held in Québec City, Canada, in August 1973.

References

Bartlett, F.C. Thinking : An experimental and social study. New York : Basic Books, 1958.

Berlyne, D.E. Conflict, arousal, and curiosity. New York : McGraw-Hill, 1960.

Crites, John O. Vocational psychology. New York : McGraw-Hill, 1969.

Fiske, Donald W., & Maddi, Salvatore R. Functions of varied experience. Homewood, Ill. : Dorsey, 1961.

Ginzberg, Eli, Ginsburg, Sol, Axelrad, Sidney, & Herma, John. Occupational choice : An approach to a general theory. New York : Columbia University Press, 1951.

Guilford, J.P. The structure of intellect. Psychological Bulletin, 1956, 53, 267-293.

Guilford, J.P. The nature of human intelligence. New York : McGraw-Hill, 1967.

Guilford, J.P. & Hoepfner, Ralph. The analysis of intelligence. New York : McGraw-Hill, 1971.

Havighurst, Robert J. Youth in exploration and man emergent. In Borow, Henry (Ed.), Man in a world at work. Boston : Houghton Mifflin, 1964, pp. 215-236.

Houston, J.P., & Mednick, S.A. Creativity and the need for novelty. In Lester, David (Ed.), Explorations in exploration : Stimulation seeking : An enduring problem in psychology. New York : Van Nostrand Reinhold Company, 1969, pp. 139-149.

Lester, David. The effect of fear and anxiety on exploration and curiosity : Toward a theory of exploration. Journal of General Psychology, 1968, 79, 105-120.

Maslow, A.H. The need to know and the fear of knowing. In Lester, David (Ed.), Explorations in exploration : Stimulation seeking : An enduring problem in psychology. New York : Van Nostrand Reinhold Company, 1969, pp.199-217.

Noiseux, Gilles & Pelletier, Denis. Dossier d'orientation I. Montréal : McGraw-Hill, 1972, (a).

Noiseux, Gilles, & Pelletier, Denis. Dossier d'orientation I : Guide de l'animateur. Montréal : McGraw-Hill, 1972, (b).

Nusbaum, Kathryn M. Differential novelty, complexity and affective stimulation as variables in exploratory behavior. Dissertation Abstracts, 1965, 25, (12,Pt.1), 7395.

Parsons, Frank. Choosing a vocation. Boston : Houghton Mifflin, 1909.

Pelletier, Denis. Une méthodologie radicalement nouvelle de l'orientation scolaire et professionnelle. Paper presented at the Colloquium in Educational and Occupational Information, Sherbrooke University, April 1973.

Pelletier, Denis & Noiseux, Gilles. Méthodes Créatives appliquées aux activités d'orientation. (Prel.ed.) Quebec : Université Laval. 1971.

Pelletier, Denis, Noiseux, Gilles, & Bujold, Charles. Activation du développement vocationnel et personnel. (Université Laval : Projet de recherche, DGES-FCAC-72-04) Québec: Programme de formation de chercheurs et d'action concertée, Gouvernement du Québec, 1971.

Super, Donald E. A theory of vocational development. American Psychologist, 1953, 8, 185-190.

Super, Donald E. The psychology of careers. New York : Harper & Row; 1957.

Super, Donald E. L'orientation : Vers une profession ou vers une carrière? Paper presented at the Congress of the Vocational Guidance Counselors of Quebec, L'Esterel, September 1963.

Super, Donald E. Vocational development theory : Persons, positions; and processes. The Counseling Psychologist, 1969, 1, 2-14.

Super, Donald E., Crites, John O., Hummel, Raymond C., Moser, Helen P.; Overstreet, Phoebe L., & Warnath, Charles F. Vocational development : A framework for research. New York : Bureau of Publications, Teachers College, Columbia University, 1957.

Super, Donald E., Starishevsky, Reuben, Matlin, Norman, & Jordaan, Jean Pierre. Career development : Self-concept theory. New York : College Entrance Examination Board, 1963.